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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/565,291

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Rodney A. Mattson

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PHILIPS INTELLECTUAL PROPERTY & STANDARDS  
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CLEVELAND, OH 44143

EXAMINER

HO, ALLEN C

ART UNIT

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PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/565,291	<b>Applicant(s)</b> MATTSON ET AL.	
	<b>Examiner</b> Allen C. Ho	<b>Art Unit</b> 2882	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 14 July 2008.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-16 and 18-22 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 14-16 and 18-22 is/are allowed.
- 6) ☒ Claim(s) 1-13 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 22 January 2008 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)          | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____                                      |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)          | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____  | 6) <input type="checkbox"/> Other: _____                          |

## **DETAILED ACTION**

### ***Claim Rejections - 35 USC § 112***

1. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

2. Claims 1-13 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claims 1-13 recite an anti-scatter module in a passive manner. It is unclear whether or not the two-dimensional radiation detector actually comprises an anti-scatter module. As noted in MPEP § 2114, an apparatus claim must be structurally distinguished from the prior art. When the structure of an apparatus claim is indefinite, its patentability cannot be ascertained.

Claim 7 recites "first strips parallel to anti-scatter vanes, which first strips are wider than a thickness of the anti-scatter vanes and are equal or greater than a gap between the elements of the detector array". This limitation is indefinite since it compares first strips to anti-scatter vanes, which are unknown elements not part of the radiation detector. There is no claim language that positively claims a radiation detector that comprises anti-scatter vanes. This comparison with unknown makes this limitation indefinite.

Claim 8 recites "second strips perpendicular to anti-scatter vanes, which second strips are of substantial a same dimension as a gap between the detector elements". This limitation is indefinite since it compares second strips to anti-scatter vanes, which are unknown elements not part of the radiation detector. There is no claim language that positively claims a radiation

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detector that comprises anti-scatter vanes. This comparison with unknown makes this limitation indefinite.

***Claim Rejections - 35 USC § 103***

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 1, 6, and 12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Igarashi *et al.* (U. S. Patent No. 6,587,538 B2) in view of Adachi *et al.* (U. S. Patent No. 6,304,626 B1).

With respect to claim 1, Igarashi *et al.* disclosed a two-dimensional detector that comprises: a first alignment means for aligning an anti-scatter module (**30, 130, 220, 230**) with a spatial focus (**11**) (The fact that the anti-scatter module is aligned with the spatial focus implies the existence of a first alignment means); a second aligning means for aligning the anti-scatter module; a detector subassembly module, each detector subassembly module including a substrate (**160, 171, 241**) and an array of detector elements (**163, 172, 242**); wherein the second aligning means includes alignment pins (**154, 173, 243**) that aligns the anti-scatter module with the detector subassembly module (Figs. 5, 8A, 8B).

However, Igarashi *et al.* did not disclose a radiation absorbing mask formed as a grid and arranged between the array of the detector elements and the anti-scatter module.

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Adachi *et al.* disclosed a two-dimensional detector that comprises a radiation absorbing mask (**14**) formed as a grid and arranged between the array of the detector elements and the anti-scatter module. Adachi *et al.* taught that the sensitivity of x-ray detecting elements drops abruptly in the vicinity of the edges, which may produce an artifact in a reconstructed image (column 1, lines 40-51).

It would have been obvious to a person of ordinary skill in the art at the time the invention was made to provide a radiation absorbing mask formed as a grid and arranged between the array of the detector elements and the anti-scatter module, since a person would be motivated to produce a reconstructed image without artifacts.

With respect to claim 6, Igarashi *et al.* and Adachi *et al.* disclosed the radiation detector as set forth in claim 1, wherein the anti-scatter module includes: a plurality of anti-scatter vanes (Igarashi *et al.* **33**, **133**) formed of a material which is substantially absorbing for radiation produced by the radiography scanner (Igarashi *et al.*, column 4, lines 60-67).

With respect to claim 12, Igarashi *et al.* and Adachi *et al.* disclosed the radiation detector as set forth in claim 1, wherein the detector element array includes: a scintillator array (Igarashi *et al.* **43**) that produces scintillation events responsive to radiation; and a photodetector element array (Igarashi *et al.* **160**), each photodetector element of the array being arranged to view one of the scintillation elements of the scintillation array (Igarashi *et al.*, column 3, lines 38-55).

5. Claim 9 is rejected under 35 U.S.C. 103(a) as being unpatentable over Igarashi *et al.* (U. S. Patent No. 6,587,538 B2) and Adachi *et al.* (U. S. Patent No. 6,304,626 B1) as applied to claim 6 above, and further in view of Tang (U. S. Patent No. 5,949,850).

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With respect to claim 9, Igarashi *et al.* and Adachi *et al.* disclosed the radiation detector as set forth in claim 6. However, Igarashi *et al.* and Adachi *et al.* did not disclose a radiation absorbing mask having stepped edges, which interleave with stepped edges of adjacent radiation absorbing masks.

Tang disclosed a radiation absorbing mask having stepped edges, which interleave with stepped edges of adjacent radiation absorbing masks (Fig. 2). Manufacturing a plurality of small radiation absorbing masks are preferred over manufacturing a large radiation absorbing mask because small radiation absorbing masks can be made accurately (column 4, lines 28-31).

It would have been obvious to a person of ordinary skill in the art at the time the invention was made to provide a plurality of radiation absorbing masks having stepped edges for mating with adjacent radiation absorbing masks, since a person would be motivated to form a large radiation mask accurately.

#### ***Allowable Subject Matter***

6. Claims 14-16 and 18-22 are allowed.
7. The following is a statement of reasons for the indication of allowable subject matter:

With respect to claim 14, the prior art discloses a computed tomography scanner that comprises: an x-ray source mounted to rotate about an examination region, the x-ray source emitting a cone shaped x-ray beam from a radiation focal point and traverse the examination region; a two-dimensional radiation detector which receives the cone beam that has traversed the examination region, the radiation detector including a plurality of detector modules, each detector module including: an anti-scatter module, a detector subassembly module aligned with

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the anti-scatter module, each detector subassembly module including a substrate and an array of detector elements arranged on the substrate to detect radiation, and a radiation absorbing mask formed as a grid, the mask being arranged between and aligned with the array of detector elements and the anti-scatter module; and a reconstruction processor for reconstructing signals from the detector element array into a volumetric image. However, the prior art fails to disclose or fairly suggest an anti-scatter module including alignment pins, wherein the alignment pins of the anti-scatter module extend through alignment openings in the mask and alignment openings in the detector subassembly module as claimed.

With respect to claims 15, 16, and 18-20, the prior art discloses a method for manufacturing a radiation detector for a computed tomography scanner, the method comprises: aligning an anti-scatter module, which includes extending alignment pins, with a detector subassembly module including a substrate and an array of detector elements arranged on the substrate to detect radiation, and a radiation absorbing mask disposed between the anti-scatter module and the detector elements of the array. However, the prior art fails to disclose or fairly suggest inserting the alignment pins through alignment openings in the mask and alignment openings in the detector subassembly module as claimed.

With respect to claims 21 and 22, the prior art discloses a radiation detector that comprises a plurality of detector modules, each detector module including: an anti-scatter module, including a plurality of vanes and alignment pins. However, the prior art fails to disclose or fairly suggest a rectangular grid that includes: a plurality of wider strips, arranged parallel to each other, each wider strip being wider than a width of each vane; and a plurality of

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thinner strips, the plurality of thinner strips being arranged perpendicular to the wider strips to form uniform openings, each wider strip is aligned with a corresponding vane as claimed.

***Response to Amendment***

8. Applicants' amendments filed 14 July 2008 with respect to claim 6 have been fully considered. The objection of claim 6 has been withdrawn.

9. Applicants' amendments filed 14 July 2008 with respect to claim 22 have been fully considered. The objection of claim 22 has been withdrawn.

10. Applicants' amendments filed 14 July 2008 with respect to claims 1-6 and 9-13 have been fully considered. The rejection of claims 1-6 and 9-13 under 35 U.S.C. 112, second paragraph, has been withdrawn.

11. Applicants' amendments filed 14 July 2008 with respect to claims 1, 6, and 12 have been fully considered. The rejection of claims 1, 6, and 12 under 35 U.S.C. 102(b) as being anticipated by Adachi *et al.* (U. S. Patent No. 6,304,626 B1) has been withdrawn.

12. Applicants' amendments filed 14 July 2008 with respect to claims 1, 6-8, and 10-13 have been fully considered. The rejection of claims 1, 6-8, and 10-13 under 35 U.S.C. 103(a) as being unpatentable over Hoffman (U. S. Patent No. 6,934,354 B2) in view of Hoffman *et al.* (U. S. Patent No. 5,799,057) has been withdrawn.



***Response to Arguments***

13. Applicants' arguments filed 14 July 2008 with respect to claim 14 have been fully considered and are persuasive. The rejection of claim 14 under 35 U.S.C. 112, second paragraph, has been withdrawn.

14. Applicant's arguments filed 14 July 2008 have been fully considered but they are not persuasive.

With respect to the rejection of claims 7 and 8 under 35 U.S.C. 112, second paragraph, the applicants argue that claims 7 and 8 have been amended to depend from claim 6, which positively claims the anti-scatter vanes as part of the anti-scatter module. This argument is not persuasive since claim 1 does not positively claim an anti-scatter module. Therefore, the rejection is being maintained.

***Conclusion***

15. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure:

Mattson *et al.* (U. S. Patent No. 6,426,991 B1) disclosed a CT detector that employs alignment pins (Fig. 10).

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Allen C. Ho whose telephone number is (571) 272-2491. The examiner can normally be reached on Monday - Friday from 9:00 am - 6:00 pm.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Edward J. Glick can be reached on (571) 272-2490. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Allen C. Ho/  
Primary Examiner  
Art Unit 2882

28 October 2008